

**WHAT IS CLAIMED:**

1. An adenovirus with novel vector tropism and ablation of native adenoviral receptor tropism due to the expression  
5 of a fiber replacement protein, said fiber replacement protein comprises:

a) an amino-terminal portion comprising an adenoviral fiber tail domain;

b) a chimeric protein that provides trimerization  
10 function; and

c) a carboxy-terminal portion comprising a targeting ligand.

15 2. The adenovirus of claim 1, wherein said fiber replacement protein associates with the penton base of the adenovirus.

20 3. The adenovirus of claim 1, wherein said fiber replacement protein is a rod-like, trimeric protein.

4. The adenovirus of claim 3, wherein said rod-like, trimeric protein has a diameter comparable to the native fiber protein of wild type adenovirus.

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5. The adenovirus of claim 1, wherein said fiber replacement protein retains trimerism when a sequence encoding a targeting ligand is incorporated into the carboxy-terminus.

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6. The adenovirus of claim 1, wherein said fiber replacement protein is soluble.

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~~7. The adenovirus of claim 1, wherein said fiber replacement protein is T4 bacteriophage fibrin protein~~

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8. The adenovirus of claim 1, wherein said fiber replacement protein is selected from the group consisting of trimeric

structural proteins, trimeric viral proteins and trimeric transcription  
factors.

5                    9. The adenovirus of claim 1, wherein said fiber  
replacement protein contains isoleucine trimerization motif.

10                    10. The adenovirus of claim 1, wherein said fiber  
replacement protein is neck region peptide from human lung  
surfactant D.

15                    11. The adenovirus of claim 1, wherein said fiber  
replacement protein is an artificial protein having a coiled coil  
secondary structure, wherein said secondary structure is stable  
because of multiple interchain interactions.

20                    12. The adenovirus of claim 1, wherein said targeting  
ligand is selected from the group consisting of physiological ligands,

anti-receptor antibodies, cell-specific peptides and single chain antibodies.

5           13. The adenovirus of claim 1, wherein said adenovirus carries in its genome a therapeutic gene.

10           14. The adenovirus of claim 13, wherein said therapeutic gene is a herpes simplex virus thymidine kinase gene.

15           15. A method of killing tumor cells in an individual in need of such treatment, comprising the steps of:

          pretreating said individual with an effective amount of the adenovirus of claim 14; and

          administering ganciclovir to said individual.